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AUTHOR Berson, Ilene R.
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ABSTRACT

The incidence of neurologically impaired students in the classroom may continue to increase as advances in medicine contribute to the survival of children suffering from severe trauma. Inclusion of neuropsychological principles into a psychological evaluation provides a comprehensive synthesis of cognitive, sensorimotor, and emotional elements of behavior which may provide valuable information concerning the etiology of learning deficits. School psychologists who engage in neuropsychological assessment should receive training in basic neuropsychological development. The neuropsychological abnormalities most often seen in children with learning disabilities are not gross deviations but rather fine, subtle, and minor symptoms, including minor coordination difficulties, minimal tremors, motor awkwardness, visual-motor disturbances, deficiencies or abnormal delay in language development, and difficulty in reading and arithmetic skills. Because the student's neurological system is not yet mature and is continually changing, it is often very difficult to differentiate between a lag in maturation and a dysfunction of the central nervous system. Knowledge of neuropsychological development may assist school psychologists in the selection of assessment instruments, interpretation of test results, and appropriate referrals. By integrating neuropsychological insights into a more comprehensive conceptualization of the challenges of functioning in a school setting, school psychologists may supplement their methods for understanding children and improve the provision of services to children. (LLL)

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Neuropsychology in the Schools:

Implications for School Psychology

Ilene R. Berson

University of Toledo

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Abstract

Since the recognition of a neurological basis of learning disorders, school psychologists have become increasingly interested in the application of neuropsychology to the educational environment. This article provides a conceptual framework for incorporating neuropsychological assessment into the professional practice of school psychology. Issues relating to (a) the application of neuropsychological principles to children, (b) the potential roles of school psychologists, and (c) training in this specialized area are discussed.

Neuropsychology in the Schools: Implications for School Psychology

As the field of school psychology continues to evolve, interest in subspecialties has arisen. Among the areas being explored by school psychologists is the application of neuropsychology to the school setting. Although research based on brain-behavior relationships is not a new sphere of study in psychology, the application of neuropsychological principles to the educational environment is a relatively recent development (Gaddes, 1985).

Endorsed definitions of learning disabilities have contributed to the increased interest in neuropsychology. P. L. 94-142, the Education for all Handicapped Children Act (1975), included conditions with a known neurologic etiology (Hynd, Hayes, & Snow, 1982), such as "perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia" (Federal Register, 1976, p. 56977). By implying a relationship between impaired brain functioning and learning disorders, the federal definition began to popularize the belief of many neuropsychologists that learning disorders have a presumed neurological basis (Gaddes, 1985). As a result, support for the incorporation of this special area of study into the practice of school psychology gained momentum. The Association for Children and Adults with Learning Disabilities (ACLD) (ACLD Board of Directors, 1985) and the National Joint Education Committee on Learning Disabilities (NJCLD) (1987) formulated definitions that explicitly attributed learning disabilities to neurological dysfunction and provided further impetus for applied educational neuropsychology.

Nonetheless, current practices in the school have stressed the identification of learning disabilities based upon a severe discrepancy in potential and academic

achievement (Hynd & Snow, 1988). This definition ignores the presence of neuropsychological dysfunction and suggests that learning disabilities are attributable to a single criterion--underachievement. The criterion of underachievement, however, is insufficient to distinguish between students exhibiting school-related problems due to poor instruction, lack of motivation, emotional disturbances, or brain impairment (Taylor, 1988).

Proponents argue that neuropsychological assessment provides additional diagnostic information about a child's strengths and weaknesses over that acquired through traditional psychoeducational assessment (D'Amato, Gray, & Dean, 1988). Since school psychologists serve a substantial number of students with learning deficits, many professionals are exploring the adaptation of neuropsychological principles to the educational setting (Hynd & Obrzut, 1981; Obrzut, 1981).

The purpose of this paper is to evaluate the usefulness of incorporating neuropsychological assessment into the role and function of school psychologists. The author will examine the types of disorders that might benefit from this approach and will address the specialized training necessary for competent application of neuropsychological principles.

The Application of Neuropsychology to Children

Neuropsychology is a discipline that focuses on the relationship between brain function and human behavior (Rourke, 1976). Most of the research has been applied to the behavior of adults with brain injury; however, recent work in the specialized field has focused on the application of neuropsychological principles to children (Gaddes, 1985; Obrzut & Hynd, 1987).

Learning Disabilities

Neuropsychologists have been interested in the perceptual, cognitive, and motor deficits of learning disabled individuals and in the relationship of these deficits to brain structure and function (Gaddes, 1985). According to Taylor (1988), psychologists have searched for direct evidence of neuropathology in learning disabled children and have reported "a few abnormalities of cellular structure at various cortical and subcortical sites along with computed tomography observations of hemispheric asymmetries in brain morphology" (p. 796). Nonetheless, evidence of neurological dysfunction in learning disabled children has been based primarily upon studies identifying "greater than expected numbers of learning disabled children with family histories of learning problems, an elevated incidence of pre- and perinatal complications early in life, and electrophysiological abnormalities" (p. 796).

Using neuropsychological analysis, researchers have differentiated learning-disabled children from normal children (Selz & Wilson, 1989). Obrzut and Hynd (1987) have reported similarities in the neuropsychological test results of children with learning disabilities and children and adult patients with learning problems resulting from head injuries and brain trauma. Thus, the motor and cognitive deficits of patients with acquired brain injury parallel the deficits of learning disabled children.

Research also has revealed that the subpopulation of learning disabled students is a heterogeneous group (Denckla, 1972). Currently, the diagnostic and treatment methods for learning disabled children address the needs of these students as if it were a single nosological category (Gray & Dean, 1990). The inclusion of

neuropsychological principles into a psychological evaluation provides a comprehensive synthesis of "cognitive, sensorimotor, and emotional elements of behavior" (Kelly & Dean, 1990, p. 491) which may provide valuable information concerning the etiology of learning deficits. Moreover, the classification of learning disabilities into subtypes may improve placement and treatment decisions and aid in the formulation of prognoses.

Role of the School Psychologist

Within the school setting, school psychologists may serve children possessing a wide range of handicapping conditions; however, a significant amount of the cases commonly seen by these professionals involves the clinical differentiation of learning disorders. According to Gaddes (1985), approximately 15% of the children in elementary school are academic underachievers. Gaddes conservatively estimates that half of the underachievers have some degree of neurological dysfunction while the other 7% have problems with a sociological or environmental etiology. School psychologists estimate that

> 33% of all the students seen professionally...exhibit 'soft' neurological signs such as neuromuscular clumsiness, speech/language delays, or severe perceptual deficits. An additional 10.5% of their served students exhibit 'hard' neurological signs such as medical evidence of brain tumors, hemorrhage, head trauma, cerebral palsy, or seizure disorders. (Leavell & Lewandowski, 1988, p. 149)

The incidence of neurologically impaired students in the classroom may continue to increase as advances in medicine contribute to the survival of children suffering from severe trauma (Kelly & Dean, 1990). Neonatology has developed

procedures to save the lives of low birth weight babies who later may encounter learning disabilities. Similarly, infants with heart conditions have exhibited symptoms of learning disabilities during childhood. Other disorders, including cerebral palsy, seizure disorders, developmental delays, behavioral disorders, and attention deficits have been linked to complications during the perinatal period (Kelly & Dean, 1990). Early identification of neurological deficits is important for these children who are at risk for cognitive, physical, and affective disorders.

Medical advances also have contributed to the survival of children sustaining head trauma, the most prevalent cause of neurologic impairment (Bigler, 1987). Upon entering school, these children are at an increased risk of exhibiting school-related difficulties, but cognitive deficits may not be detected on traditional psychoeducational assessments. Neuropsychologically trained school psychologists may utilize other procedures that are sensitive to minor dysfunctions and develop interventions for the children's reentry into the classroom (Kelly & Dean, 1990).

Thus, a substantial number of cases served by school psychologists may involve neurological dysfunction. The neuropsychologically trained school psychologist may not only make an important contribution to the assessment and remediation of children exhibiting obvious neurological impairment (e.g., the hemiplegic or epileptic child), but these professionals also may assist in the treatment of learning disabled students with subtle neurological deficits who make little academic progress.

Assessment and Remediation

Many researchers have proposed a conceptual framework in which school psychologists utilize neuropsychological techniques to improve services for children with learning deficits (Hynd, Hayes, & Snow, 1982; Hynd & Obrzut, 1981). Rather than assume the function of a clinical neuropsychologist who diagnoses the site of a brain lesion, school psychologists would acquire sufficient expertise to identify areas of deficits and assist educators in the development of curricular approaches that are most appropriate for a child's neuropsychological capabilities. According to Hynd, Hayes, and Snow (1982), "the localization of cortical dysfunction is not so important as is the identification of children whose program of intervention must build on available strengths" (p. 449).

The adaptation of neuropsychological principles to the educational environment may improve the differentiation of neurologically based learning disabilities from learning deficits that are attributable to other causes (Hynd, Hayes, & Snow, 1982). Emotional disturbances may impair school functioning; however, in these cases a neuropsychological assessment will not reveal the soft neurological signs associated with learning disabilities. The school psychologist may incorporate appropriate remediation techniques depending upon the etiology of the learning deficit. If the learning problem is not attributable to neurological impairment, then the most appropriate remediation is direct intervention. Conversely, if the neuropsychological assessment reveals brain dysfunction, then the school psychologist should incorporate compensatory educational strategies into the intervention (Hynd, Hayes, & Snow, 1982; Hynd & Snow, 1988).

Early Identification

Neuropsychological batteries may improve methods of early identification of children at risk for future learning disabilities (Gaddes, 1983). By distinguishing normal behaviors from those that are maladaptive and due to dysfunction of the central nervous system, school psychologists may (a) observe the on-going development of the neuropsychologically impaired child, (b) make predictions regarding long-term outcomes, and (c) evaluate interventions for their effectiveness. Moreover, early remediation efforts may diminish the effects of secondary emotional distress that often accompany neurological dysfunction (Teeter, 1989).

Training Issues

While many researchers emphasize the relevance of educational neuropsychology to the practice of school psychology, few school psychologists have received formal academic training in this area (Leavell & Lewandowski, 1988). Directors of most degree programs contend that instruction in neuropsychological screening and assessment techniques is an important area of training (Hynd, Quackenbush, & Obrzut, 1980), but few programs offer extensive study in child neuropsychology for school psychologists (Hynd & Snow, 1988). Therefore, school psychologists wishing to gain further exposure to this area of specialization must seek continuing education experiences.

Hynd (1981) has proposed a model for training school psychologists in neuropsychology. He envisions the inclusion of basic course work in physiological psychology into every school psychology program. Ideally, practicum and internship experiences in neuropsychological assessment would be available. Furthermore, doctoral students may engage in more intensive study of

neuropsychological principles, including functional neuroanatomy and physiology. Later, they may serve as consultants for those psychologists with less expertise (Hynd, Hayes, & Snow, 1982) and facilitate communication between the medical community (e.g., the neurologists) and the educational staff (Gaddes, 1985; Hynd, Quackenbush, & Obrzut, 1980).

Additionally, although school psychologists are already familiar with many assessment instruments used in neuropsychological evaluation (e.g., Wechsler Intelligence Scale for Children-Revised [WISC-R]; Bender-Gestalt), they must develop expertise in selecting the assessment instruments that will yield an expedient but valid appraisal of a child's functioning (Hartlage & Golden, 1990). Neuropsychological assessments are extremely time-consuming, requiring four to six hours for administration. Therefore, school psychologists must understand the psychometric procedures associated with neuropsychological assessment in children and select instruments that measure discrete constructs relevant to the evaluation (Hynd & Snow, 1988). Researchers are examining standardized neuropsychological batteries to assure that the tests offer unique information concerning learning-disabled children's functioning. D'Amato, Gray, & Dean (1988) have found that only 10% of the variability of the Halstead-Reitan Neuropsychological Battery is redundant with the functions measured by the WISC-R.

School psychologists who engage in neuropsychological assessment also should receive training in basic neuropsychological development (Hynd & Snow, 1988). The neuropsychological abnormalities most often seen in children with learning disabilities are not gross deviations but rather fine, subtle, and minor

symptoms, including minor coordination difficulties, minimal tremors, motor awkwardness, visual-motor disturbances, deficiencies or abnormal delay in language development, and difficulty in reading and arithmetic skills (Gaddes, 1985). Because the student's neurological system is not yet mature and is continually changing, it is often very difficult to differentiate between a lag in maturation and a dysfunction of the central nervous system. Knowledge of neuropsychological development may assist school psychologists in the selection of assessment instruments and in the interpretation of test results (Hynd & Snow, 1988).

Once neuropsychological services are incorporated into the school setting, school psychologists must become aware of when to refer a child to a neurologist. Children with neurological dysfunctions may be discovered in the school setting and require medical treatment. Hynd and Snow (1988) note that school psychologists may be asked to assess a child with learning or behavioral problems that are the initial manifestation of muscular dystrophy. Moreover, the psychologists may identify severe hyperactive behavior or suspected petit mal seizures that require medical intervention. Establishing appropriate referral sources and creating a rapport between the academic and medical community may be an important function for the school psychologist.

Conclusion

The contention that many learning disorders are attributable to neurological factors has fueled the interest of school psychologists in acquiring a conceptual framework for application of neuropsychological principles to the school-age child. Nonetheless, as neuropsychology moves into the educational setting, practitioners

must beware of haphazardly implementing this technique without adequate training and preparation.

Ideally, the school neuropsychologist should continue operating within a general systems framework and incorporate a neuropsychological perspective into his or her general repertoire of knowledge and skills. When a school psychologist discovers a child with a neurological dysfunction

> invariably there are related developmental issues, difficulties with achievement, misunderstandings between parent and child over expectations, misunderstandings between school and child over expectations, perhaps even worse disabilities in other areas, and failure on the school's part to adapt to the child. (Haak, 1989, p. 496)

The school psychologist should remain aware of the multiple adjustments to home and school that the neurologically impaired child must undergo. Therefore, the neuropsychological perspective should not be used in isolation. This specialized orientation may be viewed as an additional tool to facilitate more complete understanding of children's problems. By integrating neuropsychological insights into a more comprehensive conceptualization of the challenges of functioning in a school setting, school psychologists may supplement their methods for understanding children and, thereby, improve the provision of services to students.

References

Association for Children and Adults with Learning Disabilities (ACLD) Board of Directors. (1985). Definition of the condition of specific learning disabilities. ACLD Newsbriefs, 158, 1-3.

Bigler, E. (1987). Acquired cerebral trauma, neuropsychiatric and psychoneurological assessment, and cognitive retraining issues. Journal of Learning Disabilities, 20(10), 579-580.

D'Amato, R. C., Gray, J. W., & Dean, R. S. (1988). A comparison between intelligence and neuropsychological functioning. Journal of School Psychology, 26, 283-292.

Denckla, M. B. (1972). Clinical syndromes in learning disabilities: The case for "splitting' vs. "lumping." Journal of Learning Disabilities, 5, 401-406.

Federal Register. (1976). Education of handicapped children and incentive grants program. U.S. Department of Health, Education, and Welfare, 41, 56977.

Gaddes, W. H. (1983). Applied educational neuropsychology: Theories and problems. Journal of Learning Disabilities, 16(9), 511-514.

Gaddes, W. H. (1985). Learning disabilities and brain function: A neuropsychological approach (2nd ed.). New York: Springer-Verlag.

Gray, J. W., & Dean, R. S. (1990). Implications of neuropsychological research for school psychology. In T. B. Gutkin & C. R. Reynolds (Eds.), The handbook of school psychology (pp. 269-286). New York: John Wiley.

Haak, R. A. (1989). Establishing neuropsychology in a school setting: Organization, problems, and benefits. In C. R. Reynolds and E. Fletcher-

Janzen (Eds.), Handbook of clinical child neuropsychology (pp. 489-502). New York: Plenum.

Hartlage, L. C., & Golden, C. J. (1990). Neuropsychological assessment techniques. In T. B. Gutkin & C. R. Reynolds (Eds.), The handbook of school psychology (pp. 431-457). New York: John Wiley.

Hynd, G. W. (1981). Training the school psychologist in neuropsychology: Perspectives, issues and models. In G. W. Hynd & J. E. Obrzut (Eds.), Neuropsychological assessment and the school-age child: Issues and procedures (pp. 379-404). New York: Plenum.

Hynd, G. W., Hayes, F., & Snow, J. (1982). Neuropsychological screening with school-age children: Rationale and conceptualization. Psychology in the Schools, 19, 446-451.

Hynd, G. W., & Obrzut, J. E. (1981). School neuropsychology. Journal of School Psychology, 19, 45-50.

Hynd, G. W., Quackenbush, R., & Obrzut, J. E. (1980). Training school psychologists in neuropsychological assessment: Current practices and trends. Journal of School Psychology, 18, 148-153.

Hynd, G. W., & Snow, J. (1988). Best practices in neuropsychological assessment. In A. Thomas & J. Grimes (Eds.), Best practices in school psychology (pp. 229-236). Washington, DC: National Association of School Psychologists.

Kelly, M. D., & Dean, R. S. (1990). Best practices in neuropsychology. In A. Thomas & J. Grimes (Eds.), Best practices in school psychology-II (pp. 491-505). Washington, DC: National Association of School Psychologists.

Leavell, C., & Lewandowski, L. (1988). Neuropsychology in the schools: A survey report. School Psychology Review, 17, 147-155.

National Joint Committee on Learning Disabilities. (1985). Learning disabilities: Issues on definition. Journal of Learning Disabilities, 10(2), 107-108.

Obrzut, J. E. (1981). Neuropsychological assessment in the schools. School Psychology Review, 10, 331-342.

Obrzut, J. E., & Hynd, G. W. (1983). Implications of neuropsychology for learning disabilities. Journal of Learning Disabilities, 16, 532-533.

Obrzut, J. E., & Hynd, G. W. (1987). Cognitive dysfunction and psychoneurological assessment of individuals with acquired brain injury. Journal of Learning Disabilities, 29(1), 596-602.

Rourke, B. P. (1976). Issues in the neuropsychological assessment of children with learning disabilities. Canadian Psychological Review, 17, 89-102.

Selz, M. J., & Wilson, S. L. (1989). Neuropsychological bases of common learning and behavior problems in children. In C. R. Reynolds and E. Fletcher-Janzen (Eds.), Handbook of clinical child neuropsychology (pp. 129-145). New York: Plenum.

Taylor, H. G. (1988). Neuropsychological testing: Relevance for assessing children's learning disabilities. Journal of Consulting and Clinical Psychology, 56, 795-800.

Teeter, P. A. (1989). Neuropsychological approaches to the remediation of education deficits. In C. R. Reynolds and E. Fletcher-Janzen (Eds.), Handbook of clinical child neuropsychology (pp. 357-376). New York: Plenum.